

## The Lepidoptera of an Essex Garden.

By F. N. PIERCE, F.E.S.

Picture a large square house, standing back from the road, with a short carriage drive leading to the front door; on the porch large-leaved ivy clings, climbing side by side with rose trees and honeysuckle on the face of the house, peeping in at the windows as they wander at will to hide the somewhat stiff appearance of the early Victorian architecture. It is here in the spring one sees the delicate little *Celastrina* (*Lycaena*) *argiolus* flitting from leaf to leaf, as it seeks a suitable spot whereon to deposit its egg. To the right of the house is a miniature spinny, with a narrow overhung pathway leading to the church. Behind this path is a kitchen garden with a plentiful supply of fruit trees, always a productive spot on an evening's sugaring. To the left we can wander along one of two pathways running parallel with the road, two delightful paths, shaded by the foliage of laburnums, hornbeam, yew, elm, with numerous lilac bushes, whilst in rough rock-like beds daffodils, narcissus and anemones abound; again an ideal treacling ground. At the end we enter a waste field, used until the so-called improvement in educational matters, as a playground for the children attending the little church school. This field is separated from another vegetable garden by a thick myrabolium plum hedge. At one part is a little rustic seat, in front of which grows a large patch of valerian, so that, net in hand, the watcher can sit awaiting the arrival of "Hawks" and "Plusias," which put in an appearance as the dusk settles. Still proceeding up one of the pathways we arrive at the garden proper, a large square grass plot surrounded with a thorn hedge, and a single huge lime tree, planted to shade the house from the glare of the Essex sun. The grass plot itself has a surround of flower beds, in which many rare and lovely flowers thrive and bloom amidst the ubiquitous weeds, that in such a large garden are almost impossible to keep under. Nor must I forget to mention the collection of *Artemesias* that have been introduced with a view of feeding *Phorodesma smaragdaria*, and here and there a non-native tree, which seems out of its element and struggles for existence, a poor thin ash, a birch that pines for the moisture of our moss land, tall scrubby fir trees, and a single little bushy oak, perhaps the only one that has accommodated itself to its new home. Such then is the garden of my old friend the Rev. C. R. N. Burrows, at Mucking, in Essex, truly an oasis in the flat, uninteresting (except to the entomologist and botanist) salt marshes. Perhaps we may be permitted to glance into the hallowed sanctuary of the study. We enter by a glass door that leads to the lawn. In front of a window facing the drive is a large leather-covered desk, surrounded by bottles, pocket boxes, spirit lamps, etc., whilst in the centre is a little Leitz dissecting microscope, ready for use. This is the instrument that does all the work. To one who has had the advantage of the latest prismatic binocular it looks impossible that much can be seen, but it is a true illustration that it is not the instrument, but the user, that produces the marvellous results. The brain *versus* the machine. To the left is a part of his Entomological library, where we see rows of *Entomologists*, *Records*, etc., and a huge ledger labelled *Index Entomologicus*. This huge tome is the great index. Does Mr. Burrows want a reference, he turns up the species,

MAY 15TH, 1918.

then he can run his eye down—*argiolus*, egg described "Ent.," so and so page; first capture in Mucking; the date; recorded as feeding on Portugal laurel, *Ent. Record*, etc., etc. A marvellous accumulation of references that has taken a life time to gather, and which if published would be invaluable to the working entomologist. To the right is a large oak cabinet, with pigeon-holes, spaces for his large microscope, store-boxes, and all the impedimenta of a working naturalist. A large slide cabinet, originally filled with the collection of mites, which Mr. Burrows has since presented to the Lister Institute, but now holding his wonderful collection of genitalic slides of the Geometers, series of both English and Foreign species, to throw light on species represented in England by single species, mostly provided by Louis B. Prout. Of cabinets there are two, one an upright mahogany one, containing the butterflies, hawks, Bombyces, and Noctuæ; the other of black oak, in the form of a sideboard, with the Geometers, Plumes, Pyrales, and Crambides.

Early in 1916 Mr. Burrows conceived the idea of working his garden for Micros, visiting at various times the long fence at the bottom of the garden, and also sweeping and netting the various hedges and plants. The captured moths thus obtained were killed and pinned and sent almost daily to me. These were relaxed and set as they arrived. During 1916 about 2000 specimens were obtained, and this year (1917) this number has been even exceeded. The result has been the introduction of one new species to England, viz., *Parornix finitimella*, Zell. I should explain that Mr. Burrows took what came to hand, and not being a microlepidopterist did not trust himself to discriminate. The Tortrices and Tineæ received most attention, but the boxes sometimes contained odd specimens of the Macro-Micros. One of the most interesting was *Nephopteryx spissicella*, a well known oak feeder, and therefore not expected in that locality; two specimens form a new addition to the Mucking list. *Homoeosoma sinuella* is another species taken, including a nice whitish variety. Amongst the Knothorns were two very small specimens that bothered us. I submitted them to Mr. Thurnall, who said they were new to him. These proved to be very late, if not second brood, *Euzophera cinerosella*, a species Mr. Burrows takes in his garden. *Achroea grisella*, one specimen, is another curiosity, as all the bees of Essex have been exterminated with the Isle of Wight disease.

In the Tortrices we have *Tortrix podana*, *T. rosana*, *T. ribeana*, and *T. xylosteana* common; a rather well marked form of *T. unifasciana*, which seems to me to perhaps account for the inclusion of *Dichelia gnomana* in our lists. One *T. forsterana*, a couple of *Ptycholoma lecheana*, and some fine forms of *Batodes angustiorana* represent the group *Tortrix*. The Cnephasias received much attention. In all some 300 specimens were set, the four common species being *Cnephasia subjectana*, *C. virganreana*, *C. pascuana*, and *C. longana (ictericana)*. The three former being very variable and running into each other in wing-markings so closely as to make it imperative to examine the genitalia of each specimen before definitely deciding on the species. In doing this I came across one of those monstrosities, of which Mr. Burrows has already discovered four specimens, viz., *Acrionicta psi*, *Hydroecia nictitans*, and two *Fumea casta*, showing the absence of the valvæ externally, these being unextruded and internal. A full account of this malfor-

mation and the reproduction of it, by injury of the larva, has been dealt with by Dr. Chapman in the *Trans. of the Ent. Society of London*.

The *C. longana* series is particularly interesting, and differs much from last year's take. There seem to be two races, one the large ordinary yellowish form, and a much smaller silvery white form. This at first might be thought to be bleached, but bleaching would not reduce the size; this small form would appear to be abundant this year. Some six or seven *Cnephasia chrysanthæana* with numerous *C. nubilana* complete the list, except for one prize, a specimen of the new *C. genitalana*. One in 300! Last year (1916) in about the same number there were three specimens; the form taken at Mucking might easily be passed as a specimen of *C. subjectana* or *C. pascuana*. *Olindia ulmana*, *Argyrotoxa conwayana*, *Dictyopteryx loeflingiana*, *D. hobniana*, *D. bergmanniana*, and *D. forskaleana* show that this genus is fully represented. One specimen of *Tortrix viridana*! the only one seen, shows this species to be a great rarity in the vicinity. The *Peroneas* are poorly represented, three forms of *Peronia variegana*, and a single specimen of *P. sponsana* being the only ones seen; *Teras contaminana* occurs abundantly, with many lovely varieties. The *Conchylidae* produced two specimens of *Phtheochroa rugosana*, *Xanthosetia hamana* commonly (by the way, what has become of its brother, *X. zoezana*? I used to take it at odd places commonly; now I never see it). *Eupoecilia dubitana*, one specimen of *E. angustana*, and although not exactly from the garden, Mr. Burrows sent me a nice series of *E. affinitana* from the saltings. *Conchylis smeathmaniana* was abundant, and amongst the series I detected one specimen of *C. francillana*. In the *Penthinas* a lovely series of *Antithesia salicella* (not actually out of the garden), *Penthina pruniana* and *P. variegana* were common; of the latter was a very handsomely marked specimen of the var. *nubiferana*, which I had not seen before, and could hardly realise it as belonging to the genus at all. A single specimen of *P. ochroleucana* occurred.

In the *Spilonotidae*, *Sericoris lacunana* and *Orthotaenia striana* were abundant. The *Grapholithidae* are represented by *Bactra lanceolana*, *Paedisca corticana*, *Ephippiphora trigeminana* one specimen, the only *Phoxopteryx* being *P. achatana*. A single *Grapholitha penkleriana* and another of *G. nigromaculana* are augmented by countless thousands of every form of *G. trimaculana*. These Mr. Burrows found so numerous that he had to exercise a censorship, otherwise we should have been overwhelmed. *Hedya ocellana* was abundant with its numerous varieties; *H. dealbana* occurred sparingly with its dark var. *alnetana*. *H. aceriana* also put in a modest appearance, and occasional specimens of *Spilonota trimaculana* and *S. roborana* and *Pardia tripunctana*. *Aspis udmanniana* was represented by two specimens. A single specimen of *Retinia buoliana* was a curiosity, as with the exception of one or two fir trees in the garden I saw no others in the neighbourhood. A single *Catoptria citrana*, another of *C. hypericana*, with numerous *C. fulvana*, *C. scopoliana*, and a single *C. cana*, represent the *Catoptrias*. The *Dichroramphas* produced numerous *Dichrorampha petiverella*, with some very fine forms of its variety *flavidorsana*, a nice series of *D. plumbagana*, a single specimen of *Stigmonota compositella*, one only last year, probably indicates it is difficult to see and capture; two *S. regiana*, with numerous *Semasia janthinana*, complete the list of

this year's takings. To this must be added a single specimen of *Penthina betulaetana* taken last year, also a single *Eupoecilia atricapitana*, and a solitary *Chrosis alcella*.

The Tinea are equally well represented. Perhaps the most interesting find has been the Psychid *Xysmatodoma melanella*, Mr. Burrows' sharp eyes detecting numerous examples of the moth as well as the lichen-covered cases of the larva and pupa. This year Mr. Burrows successfully reared *Diplodoma herminata* from a neighbouring fence, whilst *Fumea casta*, *Solenobia inconspicuellla*, and *Luffia ferschaultella* turned up by the same assiduous search. *Ochsenheimeria vaculella* put in an appearance in the garden, but *O. birdella* required a visit just down the lane, where quantities of goosefoot (*Atriplex*) occurred. This species has the reputation of being very difficult to catch and only flying at stated times. Mr. Burrows seems to have found it "at home" as often as he went for it. In its company he secured a fine specimen of the brilliant little *Tinea argentimaculella*. *Scardia granella* were in abundance; *Blabophanes ferruginella* was rare, but five specimens were secured against one last year; *B. rusticella* was common; *Tinea tapetzella* was a prize, one each year in the outhouses; *T. lapella*, fine large well-marked specimens; a single very small *T. semifulvella*, corresponding with a slightly larger specimen in 1916; *Lampronia praelatella* was common on the plum hedge in the spring; *Incurvaria musculella* were common and included a specimen I have so far been unable to identify. It is dark, with a long dorsal blotch, reminding one forcibly of the true *Paedisca solandriana* type.

The Adelas are represented by *Nemophora swammerdammella* and the gorgeous *Nematois fasciella*. The *Swammerdamia* turned up strong and again require the aid of the genitalia to really satisfactorily determine the species, *S. combinella*, *S. caesiella*, *S. lutarea*, finishing with a couple of *S. pyrella*. By the way, we have too many species in our lists. Meyrick is right in coupling *S. oxyacanthella* and *S. lutarea*, and *S. caesiella* with *S. spiniella*. The Hyponomeutas produce three species, *Yponomeuta padellus*, *H. cagnagellus*, and *H. evonymellus*; whilst the light form of *Prays curtisellus* turned up in two specimens. *Plutella cruciferarum* was common, *Cerostoma vittella* in profusion, with some well-marked varieties. *Harpiteryx xylostella*, on the other hand, claims a place by reason of one specimen only. The *Gelechiidae* are well represented but hardly worked out yet, *Phibalocera quercana*, was represented by fine beautifully marked specimens, *Depressarias* would be well represented but occur rather too late for Mr. Burrows' operations. Single specimens of *Depressaria purpurella*, *D. liturella*, and examples of *D. arenella*, *D. applanella*, *D. subpropinquella* were taken, whilst *D. zephyrella* appears to be common. The curious little *Cladodes gerronella* turned up sparingly, as did examples of *Ceratophora rufescens*; *Oecogenia quadripunctata* is evidently much at home and I have some very beautiful specimens of this moth; a single example only of *Harpella geoffrella* was taken; *Dasycera sulphurella*, as one might expect, is abundant among rotten wood: a nice series of *Oecophora lunaris*, *Oe. fuscescens*, *Oe. fenestrella*, *Oe. pseudospretella*, and single examples of each of *Oe. unitella*, and *Oe. augustella*. At the *Tinea birdella* spot Mr. Burrows secured nice specimens of *Nannodia hermannella* and its satellite *N. stipella*. One of the most beautiful and abundant species was *Poecilia albiceps*, the rich black and white mark-

ings of this lovely species being much in evidence. A long and variable series of what I take to be *Lita instabilella* were obtained from the saltings. *Teleia vulgella* and *T. fugitivella* were abundant, with odd specimens of *Recurvaria nanella*, *R. leucatella* (one last year), *Bryotropha terella*, *B. domestica*, *Lita fraternella*, *L. maculiferella*, *L. hübnerella*, *Anarsia spartiella*, and *Gelechia sororeulella* completes the Gelechias as far as I have them named, though there are several other species. Argyresthias, as one would expect, were very numerous, *Argyresthia ephippella*, *A. albistria*, *A. nitidella*, with its white var. *ossea* (Haworth), *A. mendica*, *A. curvella*, with an odd specimen of *A. goedartella* and one *A. brockeella* show that they were not neglected. In order to test the occurrence of *Parornix finitimella*, Mr. Burrows neglected no opportunity of capturing specimens of this genus; in all, 108 specimens were secured and set. By far the most abundant was *Parornix anglicella*, then in point of numbers *P. finitimella* made a good second, with *P. torquilella* by no means common. Mr. Burrows obtained specimens of both broods of these three species. With the series now separated out by genitalia it is possible to see what a handsome species *P. finitimella* is, though here again are two specimens so different that I am inclined to mount them to see if there is not another species only awaiting discovery. I had hoped to duplicate the single example of this genus sent me by Mr. Whittle, of Southend, which so far is the only British example of the two specimens that form, with the type specimen of *P. finitimella*, Zeller's series of three specimens over the label *P. finitimella*. These three (Whittle's one and Zeller's two specimens) are a perfectly distinct species and are so far unnamed and undescribed. I hope to deal with them in a forthcoming paper on the genus *Parornix*, when I propose to give a plate showing how easily the different species may be separated by the genitalia.

*Gracilaria syringella* was in profusion, with some magnificent dark varieties. The *Coleophora* are represented by many species, but only a few are worked out so far. The very lovely bronzy green *Coleophora deauratella*, the white *C. anatipennella*, *C. fuscadinella*, *C. annulatella*, *C. lutipennella*, *C. salinella* and *C. caespititiella*, the latter evidently from the rushes in the adjoining marsh-land. These, with single specimens of *C. conyzae* and *C. lineola*, being all so far determined. The same may be said of the genus *Elachista*. Mr. Burrows was greatly pleased at turning up a single example of *Chrysoclysta linniella*, a species he knows well, and has often searched for in vain at Mucking. *Batrachedra praeangusta* was numerous, as was *Laverna atra*, *Chauliodus chærophyllellus*, only one specimen, *Elachista rufocinerea* common, with several specimens of the lovely white *E. argentella*, and some few examples of *Tischeria marginæa*, with a single *Elachista atricomella*. In *Lithocolletis*, *L. cramerella*, *L. spinicolella*, *L. messaniella*, *L. pomifoliella*, *L. schreberella*, *L. lantanellella*, *L. scopariella*, *L. sorbi*, *L. coryli-foliella*, occurred with hosts of *L. trifasciella*, among which I detected one with a strange genitalia, which will possibly prove to be one of the nearly allied species. A single specimen of *Lyonetia clerkella* hid itself for some time amongst the *Cemistoma laburnella* and *C. scitella*. A couple of specimens of *Bucculatrix boyerella* brings us to the difficult group *Nepticula*, of which the only specimens so far I have been able to identify are *Nepticula trimaculella* and *N. crataegi*. Of the *Pterophoridae*

only four species have been included *Platyptilia ochrodactyla* (*bertrami*) *Stenoptilia* (*Mimaeseoptilus*) *bipunctidactyla*, *S. (M.) pterodactyla* and *Oidaematophorus* (*Pterophorus*) *monodactylus*, of which he has sent me both the grey and brown forms.

This shows what can be done by systematically collecting even in a garden—provided that garden is in such a favourable locality as the Essex marshes.

---

### Some New Australian Ants.

By W. C. CRAWLEY, B.A., F.E.S.

The following paper contains descriptions of new species of *Ponerinae*, *Myrmicinae*, *Dolichoderinae*, and *Camponotinae*, captured by Prof. E. B. Poulton, Mr. G. F. Hill, and others in 1914-16. Those taken by Professor Poulton include the true female of *Euponera lutea*, Mayr, entirely different from the ant described as such by Mayr, who qualifies his determination by the words "*probabiliter ad hanc speciem pertinens.*" Either Mayr's ♀ (an ant continually occurring in collections without accompanying ♂s), should be referred to another species, or the new ♀ (taken with the ♂s in the nest) must be considered as a B form.

#### Sub-fam.: PONERINÆ.

*Euponera* (*Brachyponera*) *lutea*, Mayr. ♀.  
(Hitherto undescribed.)

L. 7mm.

Rather lighter castaneous brown than the ♂, which it very much resembles; the upper surface of thorax darker than the rest of the body. (Mayr's ♀ is almost entirely black.)

Mandibles triangular, proportionately longer than in the ♂, terminated by a large tooth, which is preceded by two smaller blunt teeth; the rest of the terminal border irregular, but not properly dentate.

Head as broad as long, narrowing somewhat behind, where the occipital border is nearly straight; clypeus flatter than in the ♂, with a shallow longitudinal groove, the anterior border feebly convex; frontal carinæ as in the ♂; eyes large (larger in proportion than in Mayr's ♀), placed close to the anterior border of head; ocelli large (also larger than in Mayr's ♀).

Thorax longer and narrower proportionately than in Mayr's ♀, narrowing very slightly behind the wings; anterior border of pronotum less convex, and angles more shouldered; scutum of mesonotum longer than broad; there is hardly any angle between the two surfaces of epinotum, and the fall of the declivity is much less abrupt than in Mayr's ♀. Scale seen from above, twice as broad as long, convex in front, straight behind; seen in profile, slightly inclined forward at the top, and convex behind from the half-way line to the apex, which is much narrower than at the base; it is as high as the first segment of gaster. It thus approximates to the form of the scale in the ♂, and is quite unlike the extremely thin scale of Mayr's ♀. Gaster similar to that of the ♂, and more pointed than in Mayr's ♀.

Mandibles smooth and shining, with scattered punctures. Upper surface of head closely and very finely punctured, the punctures cover the frontal carinæ, but do not extend to the sides of the head, nor to the space between the frontal carinæ and eyes; clypeus opaque but not sculptured; under surface of head smooth and shining. Back of thorax much more shining than the head, and with fine punctures, which are much less numerous than on the head; sides of thorax and declivity of epinotum mostly smooth; scale smooth, gaster shining and with exceedingly fine puncturation.

Antennæ and legs with a fine yellow pubescence; head, and particularly the gaster, with a longer yellow pubescence. Antennæ without erect hairs; tibiæ with